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EXAMINER	
LAY, MICHELLE K	
ART UNIT	PAPER NUMBER
2672	

DATE MAILED: 11/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/649,729	SHIMIZU, KOICHI	
	Examiner	Art Unit	
	Michelle K. Lay	2672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 August 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

The amendment filed on 19 August 2005, has been entered and made of record. However, the amendment filed does not overcome the prior art rejection made in the Non-Final office action filed 24 March 2004. Claims 1-27 are pending.

Response to Arguments

Applicant's arguments filed 19 August 2005 have been fully considered but they are not persuasive.

Applicant argues Isaacs does not teach or suggest "a selecting unit selecting a point on a displayed detailed shape; a generating unit generating a plane configured by selected points; a model generating unit generating a simplified model corresponding to the detailed shape composed of data which indicates the generated plane; and a display unit displaying the simplified model so that when an angle of normals of adjacent planes generated by the generating unit is smaller than a predetermined value a line between the adjacent planes" is not displayed as recited in the independent claims. Examiner respectfully disagrees. Applicant does not remark how Applicant's invention differs from the prior art (Isaacs) other than to provide a broad overview of Isaacs's invention and to say that Isaacs does not read on the limitations of the current claims. Furthermore, the limitations of the "selecting unit", "generating unit", "model generating unit", and "display unit" are very broad. The "selecting unit" was read as an input device, such as a mouse, which Isaacs discloses in Fig. 1, reference character

107. Additionally, the "generating unit" and "model generating unit" is considered to be part of the CPU [Fig. 1, 101] and the "display unit" is the CRT shown in Fig. 1, reference character 103. The CPU is used to run the software program that allows a user to view and/or create virtual 3D objects via polygons [col. 5, lines 7-30]. In regards to the amended limitation of the independent claims, Isaacs discloses "Discard Points by Curvature" where the polygon reduction algorithm measures the dihedral angle between each adjacent part of triangles and removes those points that touch only upon edges having dihedral angles less than the value chosen by the user [col. 11, lines 8-47], which correlates to the angle of normals disclosed.

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: s14 of Fig. 7, and s17 of Fig. 7. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required

corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "28" has been used to designate both "Reading Device" in Fig. 10 and "Portable Storage Medium" on page 19, line 1 of the disclosure. Additionally, reference character "29" has been used to designate both "Portable Storage Medium in Fig. 10 and "Reading Device" on page 19, line 1 of the disclosure. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "generating unit", model generating unit" and "display unit" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended

replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims **1-5**, **9-13**, **17-21**, and **25-27** are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,894,308 to Isaacs.

4. Claims **1**, **9**, and **17** are disclosed by the invention of Isaacs. Isaacs teaches of a method, system, and program for altering the number of polygons used to create a 3D

graphic object such that a simplified model of the original complex 3D object is created. Column 5, lines 8-17, describes a computer setup for running software that allows a user to view and create 3D objects. Lines 20-24, state, "The Polygon Reduction Editor is a tool that allows a user (or 3D content developer) to reduce the polygon count within models of 3D graphic objects in an interactive and real time manner." Lines 31-34 further describe the program of Isaacs as being embodied as a graphical user interface. Thus, Isaacs teaches that his invention includes a method, apparatus, and program for altering the number of polygons used to create a 3D graphic object. Column 7, lines 13-20, describes the six techniques for reducing the polygon count in a 3D object in the invention. Lines 21-26 state, "The latter four techniques (3-6) each may be used separately or together in various combinations of two or more. In addition, these four techniques may be used in conjunction with either or both of two additional features: (a) locking user-selected points in the 3D graphic object and (b) conserving surface boundary edges in the 3D graphic object." Thus, points from the detailed shape are selected. Lines 38 – 54 describe generating triangular planes to represent the 3D object that are configured in part by apex points of the 3D object in each of the three dimensions. Thus, select points on the 3D object are used to generate a plane in the bounding box or octahedron techniques as described by Isaacs. Figures 5 and 6 show a model-generating window in which a simplified model corresponding to a detailed 3D object is created composed of the apex points that indicated the generated triangular planes. Additionally, Isaacs discloses "Discard Points by Curvature" where the polygon reduction algorithm measures the dihedral angle between each adjacent part of

triangles and removes those points that touch only upon edges having dihedral angles less than the value chosen by the user [col. 11, lines 8-47].

5. Isaacs teaches of the invention of claims **2**, **10**, and **18**. Column 5, lines 51-54, describes the use of a mouse pointer in the system, "Typically, a cursor control device such as a mouse is used to manipulate widgets 407-449 although any other input device could be used for this purpose." Column 7, lines 21-27, teaches of locking user-selected points in the 3D object. Column 10, lines 30-37, further describes the use of the mouse to select the user-selected points for locking purposes, "When it is desired to use the Lock/Unlock Points feature to reduce the number of triangles in the 3D image, the user clicks on the Lock/Unlock Points button 411 thereby causing a mark 701 to appear in the box indicating that the feature is active, as shown in FIG. 15a. Using the cursor or other input device, the user then selects one or more strategic points in the 3D object that, when preserved, maintain the integrity of the image."

6. Isaacs discloses the invention of claims **3-5**, **11-13**, and **19-21** in column 7, lines 9-12. "Although 3D objects in the Polygon Reduction Editor are modeled using only triangles, the techniques described here may be applied to any other class or combination of classes of polygons (e.g., rectangles) to achieve similar results." Thus, Isaacs teaches that the simplified model may be configured by a plurality of polygons such as triangles or quadrangles.

7. Isaacs teaches of the invention of claims **25-27**. Column 7, lines 38-54, describe generating triangular planes to represent the 3D object that are configured in part by apex points of the 3D object in each of the three dimensions. Lines 21-27 teach of conserving surface boundary edges of the original 3D graphic object. Furthermore, Column 8 teaches of a process in which edges of the original object are preserved or discarded based on length. Thus, the simplified model is created using data composed of data of selected points, lines connecting the points, and therefore data of a plane described by the points and lines.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims **6**, **7**, **14**, **15**, **22**, and **23** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,894,308 to Isaacs in view of U.S. Patent No. 6,072,498 to Brittain et al.

8. Isaacs teaches of the invention of claims **6**, **14**, and **22** except wherein a simplified model configured by selected points is displayed in a display region different from the detailed shape. Column 10, lines 25-43, teach of selecting points on a display screen on which a detailed 3D object is displayed. Column 12, lines 64-67, and column 13, lines 1-14, discloses a viewing button such that when selected, the user is able to

alter the viewpoint of the 3D object through mouse movements and button clicking techniques. The invention of Brittain et al. teaches of a user selectable degradation technique for creating a simplified model of a complex object. Figures 4a-4d teach of displaying different views of a graphical object in separate windows. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Isaacs to include displaying different viewpoints of the 3D object in separate windows as in Brittain. One would have been motivated to make such a modification to the invention of Isaacs so that a user may be able to simultaneously view the alternate viewpoints of the 3D object as offered by Isaacs. Additionally, element 330 shows a selected object in which a simplified model will be created. Figure 4c shows the graphical element with a simplified bounding box surrounding it in the active frame while the other inactive frames show only the simplified bounding box representing the complex object. Column 8, lines 13-26, describes rendering objects in a simplified manner in response a reduction in frame rate due to object manipulation or increased computational load due to background tasks. Thus, the invention of Brittain includes displaying a simplified model in a display region different from the detailed object. Column 5, lines 19-23 of Isaacs, describes the polygon reducing invention as being interactive in real time. Column 6, lines 53-67, and column 7, lines 1-8, describe the real time interactive nature of the invention being diminished if the 3D object under consideration is sufficiently complex. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the invention of Isaacs to include displaying the simplified model configured by selected

points in a display region different from the detailed 3D object as in Brittain. One would have been motivated to make such a modification to Isaacs such that during computational intensive tasks in the invention of Isaacs the alternative viewpoint images may be temporarily replaced by simplified models, thus reducing the processing required for displaying the alternative views and allowing more processing to be performed on the reduction calculations.

9. Isaacs teaches of the invention of claims **7**, **15**, and **23** except wherein the simplified model is overlaid on the detailed shape and displayed. Figure 4c, of Brittain, shows a simplified bounding box model of a complex object in which the simplified model is overlaid on the complex shape and displayed in such a manner that the complex object is still viewable while being overlaid by the bounding box. Thus, the invention of Brittain teaches of drawing a simplified bounding box translucently overtop the complex object. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Isaacs so that the simplified model was drawn translucently and laid overtop the complex 3D object as in Brittain. One would have been motivated to make such a modification to the invention of Isaacs so that a user could more easily determine a suitable level of simplification with respect to the original 3D object by comparing the simplified and complex shapes simultaneously in the same frame.

Claims **8**, **16**, and **24** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,894,308 to Isaacs in view of U.S. Patent No. 6,072,498 to Brittain et al. as applied to claims 7, 15, and 23 above, respectively, and further in view of U.S. Patent No. 5,504,853 to Schuur et al.

10. Isaacs and Brittain, as applied to claims 7, 15, and 23 teach of the invention of claims **8**, **16**, and **24**, respectively, except wherein the simplified model and the detailed shape are displayed in different colors. The invention of Schuur et al. teaches of overlaying a mark on a figure by a user with a specific pattern and color as described in column 7, lines 36-55. It would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the invention of Isaacs to include allowing the overlaid simplified model to be drawn with a specific color so as to stand out form its corresponding complex shape as in Schuur et al. One would have been motivated to make such a modification to the invention of Isaacs so that while comparing the two overlaid images, a viewer would be better able to discern between the two models.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle K. Lay whose telephone number is (571) 272-7661. The examiner can normally be reached on Monday - Friday, 7:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached on (571) 272-7664. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michelle K. Lay
Patent Examiner
Art Unit 2672

11.14.2005

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